Listing of Claims

1. **(Original)** A system for the automatic detection and identification of hidden aboveground fixed utility objects, comprising:
    a. at least one transponder located above ground, which is capable of being tagged to at least one utility object, for radio frequency communication with an radio frequency (RF) scanner/receiver, for communication with a control head;
    b. the RF scanner/receiver and control head being powered directly by a power source; wherein, the at least one transponder includes a radio frequency identification transponder that transmits information relating to the location of the hidden object;
    c. the RF scanner/receiver includes at least one antenna and an RF interrogator; and
    d. the control head includes at least one microprocessor and a user interface for automatically communicating the identification of the object; and
    e. the RF scanner/receiver and the control head are removably mounted on a mobile machine; thereby providing the operator of the machine an adequate alert about the identity and location of the object, without requiring user interpretation when the machine comes in proximity of one of the at least one transponder and allowing the operator of the machine to avoid the at least one object tagged by the respective transponder.

2. **(Original)** The system of claim 1, wherein the system provides to the user approximately two seconds response time prior to physically contacting the utility object.

3. **(Cancelled)**

4. **(Currently Amended)** The system of claim [[3]] 1, wherein the RFID operates at a frequency band of approximately 915 MHz.

5. **(Currently Amended)** The system of claim 1, wherein the RFID outputs the ~~GPS~~ location of the tagged object relative to a predetermined positional reference datum.

6. **(Original)** The system of claim 1, wherein the at least one antenna is a directional antenna.

7. **(Currently Amended)** The system of claim 6, wherein the directional antenna is selected from the group consisting of a dipole antenna. a yagi antenna, and a unidirectional antenna.

8. **(Cancelled)**

9. **(Cancelled)**

10. **(Original)** The system of claim 1, wherein the at least one antenna includes a multiplicity of antennae.

11. **(Original)** The system of claim 10, wherein the antennae comprise a phased array.

12. **(Original)** The system of claim 11, wherein the antennae comprise directional antennae.

13. **(Original)** The system of claim 9, wherein the antennae comprise ranging antennae.

14. **(Cancelled)**

15. **(Currently Amended)** The system of claim [[14]] 1, wherein the RF interrogator operates at a frequency band of approximately 915 MHz.

16. **(Original)** The system of claim 1, wherein the user interface indicates the presence of an RFID.

17. **(Original)** The system of claim 16, wherein the user interface further indicates the distance of the RFID.

18. **(Original)** The system of claim 16, wherein the user interface further indicates the direction of the RFID.

19. **(Currently Amended)** The system of claim 1, wherein the user interface indicates RFID information [[is]] selected from the group consisting of Object Types, Telephone Pedestal, Fiber Optic Junction, Water Hydrant, Gas Valve, Power Transformer, Guy Wire, Cable anchors, Power Pole, Telephone Pole, Boundary Marker, Survey Control Point, Fence, River/Stream, Metal Tower, Road/Highway, Owner, Utility Name, Emergency Phone Number, TEFIS Number, Location, Latitude, Longitude, Install Date, Last Service Date, Local References Count, Nearby reference points, Local Reference, Distance to object, Direction to object degrees, Object type code, and combinations thereof.

20. **(Original)** The system of claim 1, wherein the user interface provides at least one sensory alarm to alert the user when an RFID is detected.

21. **(Original)** The system of claim 20, wherein the at least one sensory alarm is a visual alarm.

22. **(Original)** The system of claim 20, wherein the at least one sensory alarm is an audible alarm.

23. **(Original)** The system of claim 1, wherein the user interface provides a test function.

24. **(Original)** The system of claim 1, wherein the user interface provides a reset control.

25. **(Original)** The system of claim 1, further including a GPS locator for providing the location of the machine.

26. **(Original)** The system of claim 25, wherein the microprocessor use the data from the GPS locator and the RFID to compute the distance and direction of the RFID from the machine.

27. **(Original)** The system of claim 1, further including a wireless communicator for allowing wireless communication between the system and at least one distant database.

28. **(Original)** The system of claim 1, wherein the control head is removably mounted on a mobile machine.

29. **(Original)** A method for locating, servicing, and/or troubleshooting hidden aboveground utility objects, including:

tagging the hidden utility objects with preprogrammed passive RFID transponders;

operating a vehicle for locating, servicing, and/or troubleshooting the utility object fitted with an RF transponder detection system;

decreasing the forward progress of the vehicle when an alert is observed; locating the tagged utility object;

avoiding the tagged utility object; and

resetting the alert signal.

30. **(Currently Amended)** The method according to claim ~~38~~ 29, further including the step of programming the RFID transponders at installation.

31. **(Currently Amended)** The method of claim ~~38~~ 29, further including the step of wirelessly communicating with at least one distant database and automatically collecting and loading RFID information from the database.

32. **(Currently Amended)** The method according to claim ~~38~~ 29, further including the step of automatically collecting and loading relative position data from surveying equipment and GPS derived information.

33. **(Currently Amended)** The method according to claim ~~38~~ 29, wherein the RFID transponders provide information [[is]] selected from the group consisting of Object Types, Telephone Pedestal, Fiber Optic Junction, Water Hydrant, Gas Valve, Power Transformer, Guy Wire, Cable anchors, Power Pole, Telephone Pole, Boundary Marker, Survey Control Point, Fence, River/Stream, Metal Tower, Road/Highway, Owner, Utility Name, Emergency Phone Number, TEFIS Number, Location, Latitude, Longitude, Install Date, Last Service Date, Local References Count, Nearby reference points, Local Reference, Distance to object, Direction to object degrees, Object type code, and combinations thereof.

34. **(Currently Amended)** The method according to claim ~~38~~ 29, further including the step of providing to the user the alert approximately two seconds prior to physically contacting the utility object.

35. **(Currently Amended)** The method according to claim ~~38~~ 29, wherein the alert is at least one sensory alarm.

36. **(Currently Amended)** The method of claim ~~44~~ 35wherein the at least one sensory alarm is a visual alarm.

37. **(Currently Amended)** The method of claim ~~44~~ 35, wherein the at least one sensory alarm is an audible alarm.

38. **(New)** An RFID transponder detection system for the detection of above-ground objects, comprising:

an antenna arranged to broadcast a signal toward locations above the ground and to receive signals from RFID transponders on above-ground objects,

an RF interrogator associated with the antenna to supply signals to the antenna for broadcast and to interpret signals received from RFID transponders;

a microprocessor arranged to receive interpreted signals from the RF interrogator;

microprocessor programming to process interpreted signals, and to identify and locate a RFID transponder; and

a user interface for communicating information to a user about a detected RFID transponder.

39. **(New)** An RFID transponder detection system as claimed in claim 38 wherein a database is operatively associated with the microprocessor and stores information about identifying data in RFID transponders that may be attached to aboveground objects to be detected, and the microprocessor programming compares information about detected RFID transponders attached to aboveground objects with information in the database.

40. **(New)** An RFID transponder detection system as claimed in claim 39 further comprising a GPS system to determine a geographic location of the RFID transponder detection system and operatively associated with the microprocessor to compare such determined location with a location of a detected RFID transponder.

41. **(New)** An RFID transponder detection system as claimed in claim 40 wherein the location of a detected RFID transponder is stored in the database.

42. **(New)** An RFID transponder detection system as claimed in claim 40 wherein the location of a detected RFID transponder is transmitted by the RFID transponder.

43. **(New)** A method of assisting in the location of hidden aboveground objects comprising

marketing programmable RFID transponders that are adapted for installation on outdoor, above-ground items and that include unique identifiers,

storing the unique identifiers in a database, and

making copies of the database available to users of a RFID transponder detection system for the detection of above-ground objects on which the RFID transponders may be mounted.

44. (new) A method for locating a hidden aboveground object comprising

applying a tag with a programmed passive RFID transponder to the object above the ground;

moving a vehicle over the ground in the vicinity of the object at a speed,

transmitting RF signals toward locations above the ground from an RFID transponder detection system on the vehicle as the vehicle moves; and

upon receipt of a reply signal from the RFID transponder by the RFID transponder detection system on the vehicle, decreasing the speed of the vehicle to enable location of the object having the RFID transponder.

45. **(New)** A method of locating a hidden above-ground object comprising:

applying a tag with a passive RFID transponder to the object above the ground;

moving a vehicle over the ground in the vicinity of the object at a speed,

transmitting RF signals toward locations above the ground from an RFID transponder detection system on the vehicle as the vehicle moves

upon receipt of a reply signal from the RFID transponder by the RFID transponder detection system on the vehicle, using a GPS locator to determine the vehicle's location; and

comparing the location of the RFID transponder to the vehicle

46. **(New)** A method as claimed in claim 33, comprising detecting and identifying an object fully automatically, autonomously, and positively.

47. **(New)** A method as claimed in claim 33, wherein the motion or action of a piece of heavy machinery is stopped at detection of an RFID transponder.

48. **(New)** A method as claimed in claim 33, wherein the identification of an object is aided by position data derived from locally provided data from other RFID transponders.

49. **(New)** A method as claimed in claim 33, wherein the identification of an RFID transponder is aided by a separate radio navigation signal.

50. **(New)** An outdoor, above-ground utility installation object selected from the group consisting of

Object Types, Telephone Pedestal, Fiber Optic Junction, Water Hydrant, Gas Valve, Power Transformer, Guy Wire, Cable anchors, Power Pole, Telephone Pole, Boundary Marker, Survey Control Point, Fence, River/Stream, Metal Tower, Road/Highway, and an RFID transponder attached to the object that includes a unique identifier for the object.

51. **(New)** An object as claimed in claim 50, wherein the RFID transponder is embedded in the object.

52. **(New)** The system of claim 38 further comprising a vehicle on which the RFID transponder detection system is mounted, wherein the detection system provides an output signal for automatically stopping the vehicle.

53. **(New)** The method of claim 44 including generating an output signal for automatically stopping the vehicle.